

Design of Steel Structures MCQ Question Answer

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Question: 1. The minimum thickness of plates in a steel stack should be

- Option A. 4 mm
- Option B. 5 mm
- Option C. 6 mm
- Option D. 8 mm

Question: 2. Horizontal stiffener in a plate girder is provided to safeguard against

- Option A. Shear buckling of web plate
- Option B. Compression buckling of web plate
- Option C. Yielding
- Option D. All of the above

Question: 3. A structural member subjected to tensile force in a direction parallel to its longitudinal axis, is generally known as

- Option A. A tie
- Option B. A tie member
- Option C. A tension member
- Option D. All the above

Question: 4. Number of rivets required in a joint, is

- Option A. Load/Shear strength of a rivet
- Option B. Load/Bearing strength of a rivet
- Option C. Load/Tearing strength of a rivet
- Option D. Load/Rivet value

Question: 5. In a built up beam actual bending compressive stress f_{bc} is given by (when y_1 is the distance of the edge of the beam from the neutral axis).

- Option A. $f_{bc} = (M/I_{xx}) \times y_1$
- Option B. $f_{bc} = (I_{xx}/M) \times y_1$
- Option C. $f_{bc} = (I_{xx}/M) + y_1$
- Option D. $f_{bc} = (M/I_{xx}) + y_1$

Question: 6. Rolled steel beams are designated by Indian Standard series and its

- Option A. Weight per metre and depth of its section
- Option B. Depth of section and weight per metre
- Option C. Width of flange and weight per metre
- Option D. Weight per metre and flange width

Question: 7. The permissible stress to which a structural member can be subjected to, is known as

- Option A. Bearing stress
- Option B. Working stress
- Option C. Tensile stress
- Option D. Compressive stress

Question: 8. The allowable tensile stress in structural mild steel plates for steel tank is assumed as

- Option A. 95.0 MPa on net area
- Option B. 105.5 MPa on net area
- Option C. 105.5 MPa on gross area
- Option D. 150.0 MPa on gross area

Question: 9. If f is the maximum allowable bending stress in a tension member whose radius of gyration is r and depth is $2y$, the required cross sectional area A is given by

- Option A. $A = My/fr^2$
- Option B. $A = My^2/fr^2$
- Option C. $A = My/fr$
- Option D. $A = My/f^2r^2$

Question: 10. Modified moment of inertia of sections with a single web, is equal to moment of inertia of the section about Y-Y axis at the point of maximum bending moment and is multiplied by the ratio of

- Option A. Area of compression flange at the minimum bending moment to the corresponding area at the point of maximum bending moment
- Option B. Area of tension flange at the minimum bending moment of the corresponding area at the point of maximum bending moment
- Option C. Total area of flanges at the maximum bending moment to the corresponding area at the point of maximum bending moment
- Option D. None of these

Question: 11. Pick up the correct statement from the following:

- Option A. Vertical stiffeners may be placed in pairs one on each side of the web
- Option B. Single vertical stiffeners may be placed alternately on opposite sides of the web
- Option C. Horizontal stiffeners may be placed alternately on opposite sides of the web
- Option D. All the above

Question: 12. The average shear stress for rolled steel beam section, is

- Option A. 845 kg/cm²
- Option B. 945 kg/cm²
- Option C. 1025 kg/cm²
- Option D. 1500 kg/cm²

Question: 13. When the length of a tension member is too long

- Option A. A wire rope is used
- Option B. A rod is used
- Option C. A bar is used
- Option D. A single angle is used

Question: 14. The statical method of plastic analysis satisfies

- Option A. Equilibrium and mechanism conditions
- Option B. Equilibrium and plastic moment conditions
- Option C. Mechanism and plastic moment conditions
- Option D. Equilibrium condition only

Question: 15. The internal pressure coefficient on walls for buildings with large permeability is taken as

- Option A. ± 0.2
- Option B. ± 0.5
- Option C. ± 0.7
- Option D. 0

Question: 16. The connection of one beam to another beam by means of an angle at the bottom and an angle at the top, is known as

- Option A. Unstiffened seated connection
- Option B. Stiffened seated connection
- Option C. Seated connection
- Option D. None of these

Question: 17. The effect of racking forces is considered in the design of (i) Lateral braces (ii) Chord members The correct answer is

- Option A. Only (i)
- Option B. Only (ii)
- Option C. Both (i) and (ii)
- Option D. None of the above

Question: 18. When the axis of load lies in the plane of rivet group, then the rivets are subjected to

- Option A. Only shear stresses
- Option B. Only tensile stresses
- Option C. Both (A) and (B)
- Option D. None of the above

Question: 19. Pitch of tacking rivets, when double angles connected back to back and acting as tension members should not be more than

- Option A. 500 mm
- Option B. 600 mm
- Option C. 1000 mm
- Option D. 300 mm

Question: 20. The main assumption of the method of simple design of steel frame work, is:

- Option A. Beams are simply supported
- Option B. All connections of beams, girders and trusses are virtually flexible
- Option C. Members in compression are subjected to forces applied at appropriate eccentricities
- Option D. All the above

Question: 21. 2.Compression members composed of two channels back-to-back and separated by a small distance are connected together by riveting so that the minimum slenderness ratio of each member between the connections, does not exceed

- Option A. 40
- Option B. 50
- Option C. 60
- Option D. 70

Question: 22. In rolled steel beams, shear force is mostly resisted by

- Option A. Web only
- Option B. Flanges only
- Option C. Web and flanges together
- Option D. None of these

Question: 23. Design of a riveted joint is based on the assumption:

- Option A. Bending stress in rivets is accounted for
- Option B. Riveted hole is assumed to be completely filled by the rivet
- Option C. Stress in the plate is not uniform
- Option D. Friction between plates is taken into account

Question: 24. The maximum permissible slenderness ratio of a member carrying loads resulting from wind, is

- Option A. 180
- Option B. 200
- Option C. 250
- Option D. 300

Question: 25. The connection of intermediate vertical stiffeners to the web, not subjected to external loads, shall be designed for a minimum shear force (kN/m) of

- Option A. $75 \tau^2/h$
- Option B. $125 \tau^3/h^2$
- Option C. $125 \tau^2/h$

Option D. $175 \frac{t^2}{h}$ Where, t = the web thickness in mm and h = the outstand of stiffener in mm

Question: 26. The basic wind speed is specified at a height 'h' above mean ground level in an open terrain. The value of 'h' is

Option A. 10 m

Option B. 20 m

Option C. 25 m

Option D. 50 m

Question: 27. The diameter of base of conical flare of a steel stack is

Option A. Less than d

Option B. Equal to d

Option C. More than d

Option D. Any of the above Where d is the diameter of the cylindrical part

Question: 28. In a fillet weld placed on the sides of the base, the metal experiences

Option A. Shear

Option B. Tension

Option C. Compression

Option D. All the above

Question: 29. Angle of inclination of the lacing bar with the longitudinal axis of the column should preferably be between

Option A. 10° to 30°

Option B. 30° to 40°

Option C. 40° to 70°

Option D. 90°

Question: 30. The capacity of the smallest pressed steel tank is

Option A. 1000 litre

Option B. 1650 litre

Option C. 1950 litre

Option D. 2450 litre

Answer Sheet

1	C	
2	B	
3	D	
4	D	
5	A	
6	B	
7	B	
8	B	
9	A	
10	C	
11	D	
12	B	
13	C	
14	B	
15	C	
16	C	
17	A	
18	A	
19	C	
20	D	
21	A	
22	A	
23	B	
24	C	
25	C	
26	A	
27	C	
28	D	
29	C	
30	C	